

FCC Part 15B Compliance Test Report

Test Report no.:	FCC15B_RM-1075_12.docx	Date of Report:	09-Feb-2015
Number of pages:	19	Customer's Contact person:	Tero Huhtala
Testing laboratory:	TCC Microsoft Tampere Laboratory P.O. Box 403 Visiokatu 3 FIN-33101 TAMPERE, FINLAND Tel. +358 71 800 8000 Fax. +358 71 804 6880	Customer:	Microsoft P.O. Box 403 Visiokatu 4 FIN-33720 TAMPERE, FINLAND Tel. +358 (0) 7180 46800 Fax. +358 (0) 7180 46880
FCC listing no.:	94436		
IC recognition no.:	661AK-1		
Tested devices/ accessories:	Phone RM-1075 / Battery BV-T5C / Headset WH-108 / Laptop ASUS T100TA-DK024H / Data cable CA-190CD / AC charger AC-50E		
FCC ID:	PYATAA	IC:	-
Supplement reports:	-		
Testing has been carried out in accordance with:	CFR 47, FCC rules Part 15 Subpart B, ANSI C63.4 (2003), CISPR 22 and IC standards, RSS-GEN (Issue 3, December 2010), RSS-133 (Issue 6, January 2013). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".		
Documentation:	The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Microsoft.		
Test Results:	The EUT complies with the requirements in respect of all parameters subject to the test. The test results relate only to devices specified in this document		
Date and signature for the contents:			

Timo Raiskio, Engineer, EMC & SAR

1. Summary for FCC Part 15B Compliance Test Report

Date of receipt	16-Jan-2015
Testing completed	02-Feb-2015
The customer's contact person	Tero Huhtala
Test Plan referred to	T:\Projects\RM-1075\TestPlan\RS_testplan_RM-1075.xlsm
Notes	-
Document name	T:\Projects\RM-1075\EMC\FCC15B_RM-1075_12.docx

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:

GSM/WCDMA/WLAN/Bluetooth

The EUT is tested with maximum rated TX power.

Devices under tests

Product	Type	SN	HW	MV	SW	DUT
Phone	RM-1075	004402479019881	1690	-	02156.00000.14506.01000	43254
Phone	RM-1075	004402479019865	1690	-	02156.00000.14506.01000	43253
Battery	BV-T5C	08659	-	-	-	43257
Headset	WH-108	4235VFA	-	-	-	43230
Battery	BV-T5C	08407	-	-	-	43256
Charger	AC-20E Phihong	4868673411351126902;0675628	-	-	-	43135
Headset	WH-108	-	-	-	-	43136
Data Cable	CA-190CD	-	-	-	-	43028
Laptop	Asus T100TA- DK024H	E6NOBCO54692236	-	-	-	43219
Data cable	CA-190CD	-	-	-	-	42770
AC charger	AC-50E	4090492023260400093	-	-	-	42768
Data Cable	CA-190CD	-	-	-	-	43038

1.2. Summary of Test Results

GSM 1900:

Section in CFR 47	Section in RSS-GEN	Name of the test	Result
15.107, a	7.2.4	AC powerline conducted emissions	PASSED
15.109, a	6.1	Radiated emissions	PASSED

PASSED
FAILED
NP

The EUT complies with the essential requirements in the standard.
The EUT does not comply with the essential requirements in the standard.
The test was not performed by the TCC Microsoft Laboratory.

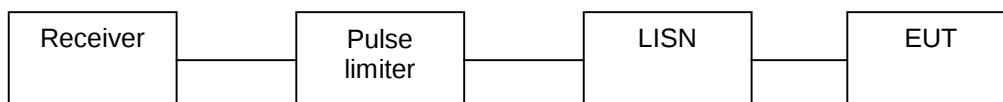
CONTENTS

1. Summary for FCC Part 15B Compliance Test Report.....	2
1.1. EUT and Accessory Information.....	2
1.2. Summary of Test Results	2
2. AC powerline conducted emissions (FCC §15.107, a, RSS-GEN, section 7.2.4).....	4
2.1. Test Setup	4
2.2. Test method and limit	4
2.3. GSM 1900 idle mode, data peripherals Test results	5
3. Radiated emissions (FCC 15.109, a, RSS-199 6.1, RSS-130 6.1, RSS-139 6.1, RSS-133 6.1).....	6
3.2. Test method and limit	6
3.3. GSM 1900 test results	8
3.4. WCDMA4 test results	9
3.5. LTE7 test results.....	10
3.6. LTE12 test results.....	12
3.7. LTE17 test results.....	14
3.8. LTE28 test results.....	16
4. Test Equipment.....	18
4.1. Conducted measurements	18
4.2. Radiated measurements	18

2. AC powerline conducted emissions (FCC §15.107, a, RSS-GEN, section 7.2.4)

EUT with DUT number	RM-1075, DUT 43254
Accessories with DUT numbers	BV-T5C, DUT 43257 ; AC-50E, DUT 42768; WH-108, DUT 43230 ; CA-190CD, DUT 42770, 43028 ; ASUS T100TA-DK024H, DUT 43219
Operation Voltage [V] / [Hz]	115 / 60
Results	PASSED
Remarks	Continuous data transfer was active between the phone and the computer during the test.
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	22 / 38 / 100.2
Date of measurements	23-Jan-2015
Measured by	Jari Jantunen

2.1. Test Setup



2.2. Test method and limit

The measurement is made according to ANSI C63.4-2003 as follows:

The EUT is placed on a wooden table 80 cm above the reference groundplane.

The EUT is connected via LISN to a test power supply.

The measurement results are obtained as described below:

$$U [dB\mu V] = U_{RX} + A_{TOT}$$

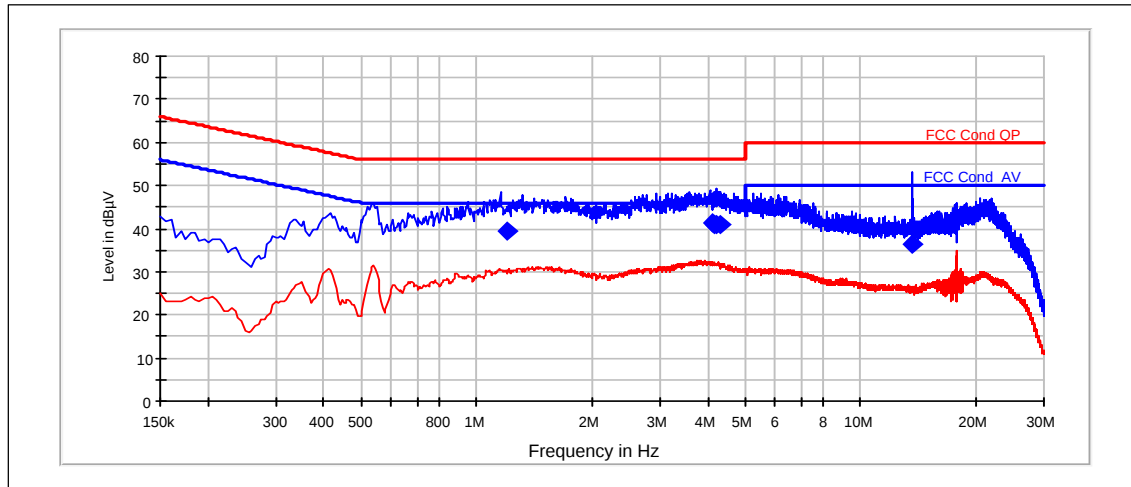
Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

CISPR 22 Class B limits

Frequency range [MHz]	Quasi peak limit [dBμV]	Average limit [dBμV]
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

2.3. GSM 1900 idle mode, data peripherals Test results

Channel 661 / 1880.0 MHz



QuasiPeak (RBW: 9 kHz)

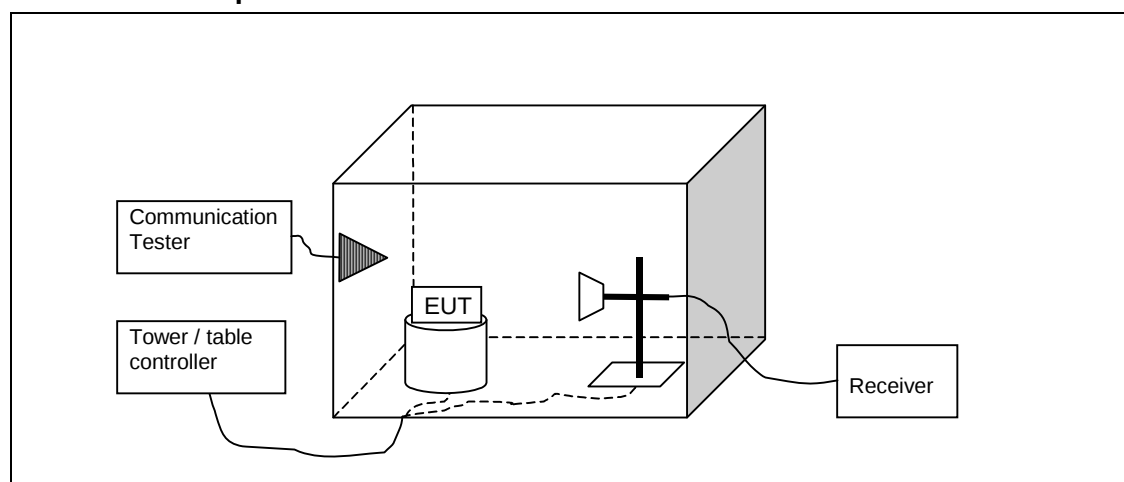
Frequency [MHz]	U [dBµV]	Line	Result
1.2	39.33	L1	PASSED
4.105	41.22	L1	PASSED
4.165	41.04	L1	PASSED
4.195	40.99	L1	PASSED
4.3	40.82	L1	PASSED
13.57	36.25	L1	PASSED

3. Radiated emissions

(FCC 15.109, a, RSS-199 6.1, RSS-130 6.1, RSS-139 6.1, RSS-133 6.1)

EUT with DUT number	RM-1075, DUT 43253
Accessories with DUT numbers	BV-T5C, DUT 43256 ; AC-20E Pihong, DUT 43135 ; WH-108, DUT 43136
Operation Voltage [V] / [Hz]	Nominal
Results	PASSED
Remarks	-
Temp [°C] / Humidity [%RH] / Air Pressure [kPa]	20 / 45 / 98.4
Date of measurements	02-Feb-2015
Measured by	Timo Raiskio

3.1.1 Test setup



3.2. Test method and limit

The measurement is made according to ANSI C63.4-2003as follows:

The measurement is performed in the Semi-Anechoic Chamber with conducting metal floor.

The measurement distance is 3 m.

The EUT is placed on a nonconductive plate at 80 cm height.

For each suspected frequency, the turntable is rotated 360 degrees and antenna is scanned from 1 to 4 m. This is repeated for both horizontal and vertical receive antenna polarizations.

The emissions less than 20 dB below the permissible value are reported.

The measurement results are obtained as described below:

$$E [dB\mu V/m] = U_{RX} + A_{TOT}$$

Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable loss, antenna factor and preamplifier gain ($A_{TOT} = L_{CABLES} + A_F - G_{PREAMP}$).

CISPR 22 and FCC Part 15 Class B limits (3 m measurement distance)

Frequency range [MHz]	Quasi peak limit [dBμV/m]	Average limit [dBμV/m]	Peak limit [dBμV/m]
30 - 230	40	-	-
230 – 1000	47	-	-
1000 - 3000	-	50	70
Above 3000	-	54	74

3.3. GSM 1900 test results

RX mode, channel 512 / 1930.2 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3861.1	38.18	81.096	45.38	-7.2	74	35.82	PASSED
7719	45.84	195.884	43.44	2.4	74	28.16	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3861.1	25.07	17.927	32.27	-7.2	54	28.93	PASSED
7719	32.43	41.831	30.03	2.4	54	21.57	PASSED

RX mode, channel 661 / 1960.0 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
35.61	24.33	16.463	53.53	-29.2	40	15.67	PASSED
195	25.11	18.009	63.11	-38	40	14.89	PASSED
209.5	2.52	1.337	39.82	-37.3	40	37.48	PASSED
226.75	10.42	3.319	46.62	-36.2	40	29.58	PASSED
238.51	9.44	2.965	45.34	-35.9	47	37.56	PASSED
479.99	36.79	69.103	65.99	-29.2	47	10.21	PASSED
719.99	41.43	117.896	66.43	-25	47	5.57	PASSED
774.99	33.69	48.362	58.29	-24.6	47	13.31	PASSED
798.086	34.05	50.408	58.35	-24.3	47	12.95	PASSED

RX mode, channel 661 / 1960.0 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7830.759	46.53	212.08	43.63	2.9	74	27.47	PASSED
7843.088	45.88	196.789	42.98	2.9	74	28.12	PASSED
7852.501	46.29	206.3	43.29	3	74	27.71	PASSED
7861.525	45.71	192.975	42.71	3	74	28.29	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7830.759	32.97	44.514	30.07	2.9	54	21.03	PASSED
7843.088	33.02	44.771	30.12	2.9	54	20.98	PASSED
7852.501	33.13	45.342	30.13	3	54	20.87	PASSED
7861.525	33.21	45.761	30.21	3	54	20.79	PASSED

RX mode, channel 810 / 1989.8 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3978.7	38.34	82.604	44.94	-6.6	74	35.66	PASSED
7958.8	46.31	206.776	43.11	3.2	74	27.69	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
3978.7	25.47	18.772	32.07	-6.6	54	28.53	PASSED
7958.8	33.39	46.72	30.19	3.2	54	20.61	PASSED

3.4. WCDMA4 test results

RX mode, channel 1537 / 2112.4 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
4225.3	39.63	95.83	45.73	-6.1	74	34.37	PASSED
6339.2	43.68	152.757	46.68	-3	74	30.32	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
4225.3	26	19.953	32.1	-6.1	54	28	PASSED
6339.2	30.79	34.634	33.79	-3	54	23.21	PASSED

3.5. LTE7 test results

RX mode, channel 2775 / 2622.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
5244.1	41.41	117.625	45.41	-4	74	32.59	PASSED
7868.9	46.54	212.324	43.44	3.1	74	27.46	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
5244.1	28.43	26.394	32.43	-4	54	25.57	PASSED
7868.9	33.25	45.973	30.15	3.1	54	20.75	PASSED

RX mode, channel 3100 / 2655 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
30	30.02	31.696	56.82	-26.8	40	9.98	PASSED
39.218	23.7	15.311	54.3	-30.6	40	16.3	PASSED
49.872	19.49	9.43	55.69	-36.2	40	20.51	PASSED
911.032	25.97	19.884	48.87	-22.9	47	21.03	PASSED

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
2656.213	68.36	2618.183	76.36	-8	70	1.64	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
2656.213	54.16	510.505	62.16	-8	50	-4.16	PASSED*

*2656.213 MHz frequency is coming from the communication tester and thus ignored.

RX mode, channel 3100 / 2655 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7819.034	46.08	201.372	43.18	2.9	74	27.92	PASSED
7820.342	46.09	201.604	43.19	2.9	74	27.91	PASSED
7843.284	46.39	208.689	43.49	2.9	74	27.61	PASSED
7858.521	46.46	210.378	43.46	3	74	27.54	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7819.034	32.95	44.412	30.05	2.9	54	21.05	PASSED
7820.342	32.98	44.566	30.08	2.9	54	21.02	PASSED
7843.284	33.01	44.72	30.11	2.9	54	20.99	PASSED
7858.521	33.16	45.499	30.16	3	54	20.84	PASSED

RX mode, channel 3425 / 2687.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
5376.1	41.64	120.781	45.64	-4	74	32.36	PASSED
8061.2	47.36	233.346	43.76	3.6	74	26.64	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
5376.1	28.59	26.884	32.59	-4	54	25.41	PASSED
8061.2	34.1	50.699	30.5	3.6	54	19.9	PASSED

3.6. LTE12 test results

RX mode, channel 5035 / 731.5 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
729.8	55.7	609.537	74.6	-18.9	47	-8.7	PASSED*

*729.8 MHz frequency is coming from the communication tester and thus ignored.

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1461.5	35.13	57.082	53.03	-17.9	70	34.87	PASSED
1464.2	35.48	59.429	53.48	-18	70	34.52	PASSED
2194.5	39.84	98.175	51.54	-11.7	70	30.16	PASSED
3001.1	38	79.433	45.8	-7.8	74	36	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1461.5	22.49	13.32	40.39	-17.9	50	27.51	PASSED
1464.2	22.72	13.677	40.72	-18	50	27.28	PASSED
2194.5	27.02	22.439	38.72	-11.7	50	22.98	PASSED
3001.1	25.19	18.176	32.99	-7.8	54	28.81	PASSED

RX mode, channel 5095 / 737.5 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
30	27.08	22.594	53.88	-26.8	40	12.92	PASSED
33.396	26.67	21.553	54.97	-28.3	40	13.33	PASSED
44.738	19.29	9.215	52.59	-33.3	40	20.71	PASSED
738.067	52.51	422.182	77.31	-24.8	47	-5.51	PASSED*
740.204	31.55	37.801	56.35	-24.8	47	15.45	PASSED
911.062	15.28	5.808	38.18	-22.9	47	31.72	PASSED

*738.067 MHz frequency is coming from the communication tester and thus ignored.

RX mode, channel 5095 / 737.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7829.456	45.74	193.642	42.84	2.9	74	28.26	PASSED
7840.181	46.13	202.535	43.23	2.9	74	27.87	PASSED
7843.691	46.26	205.589	43.36	2.9	74	27.74	PASSED
7862.326	45.85	196.11	42.85	3	74	28.15	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7829.456	32.99	44.617	30.09	2.9	54	21.01	PASSED
7840.181	33.06	44.978	30.16	2.9	54	20.94	PASSED
7843.691	33.03	44.823	30.13	2.9	54	20.97	PASSED
7862.326	33.25	45.973	30.25	3	54	20.75	PASSED

RX mode, channel 5155 / 743.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1487.9	35.41	58.952	53.61	-18.2	70	34.59	PASSED
2231.8	40.38	104.472	51.68	-11.3	70	29.62	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1487.9	22.34	13.092	40.54	-18.2	50	27.66	PASSED
2231.8	27.6	23.988	38.9	-11.3	50	22.4	PASSED

3.7. LTE17 test results

RX mode, channel 5755 / 736.5 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
736.81	46.06	200.909	64.86	-18.8	47	0.94	PASSED

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1471	35.75	61.306	53.85	-18.1	70	34.25	PASSED
1473.4	35.36	58.614	53.46	-18.1	70	34.64	PASSED
2207.6	40.31	103.633	51.91	-11.6	70	29.69	PASSED
2208.7	40.32	103.753	51.92	-11.6	70	29.68	PASSED
3000.8	38.12	80.538	45.92	-7.8	74	35.88	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1471	22.48	13.305	40.58	-18.1	50	27.52	PASSED
1473.4	22.36	13.122	40.46	-18.1	50	27.64	PASSED
2207.6	27.16	22.803	38.76	-11.6	50	22.84	PASSED
2208.7	27.19	22.882	38.79	-11.6	50	22.81	PASSED
3000.8	25.15	18.093	32.95	-7.8	54	28.85	PASSED

RX mode, channel 5790 / 740.0 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
35.38	28.63	27.008	57.73	-29.1	40	11.37	PASSED
43.697	18.69	8.6	51.49	-32.8	40	21.31	PASSED
739.086	45.87	196.562	70.67	-24.8	47	1.13	PASSED

RX mode, channel 5790 / 740.0 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7827.657	46.25	205.353	43.35	2.9	74	27.75	PASSED
7850.104	46.39	208.689	43.39	3	74	27.61	PASSED
7857.718	46.07	201.141	43.07	3	74	27.93	PASSED
7860.123	45.83	195.659	42.83	3	74	28.17	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7827.657	33.01	44.72	30.11	2.9	54	20.99	PASSED
7850.104	33.18	45.604	30.18	3	54	20.82	PASSED
7857.718	33.1	45.186	30.1	3	54	20.9	PASSED
7860.123	33.18	45.604	30.18	3	54	20.82	PASSED

RX mode, channel 5825 / 743.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1485.6	35.09	56.82	53.29	-18.2	70	34.91	PASSED
2232.1	40.62	107.399	51.92	-11.3	70	29.38	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1485.6	22.39	13.167	40.59	-18.2	50	27.61	PASSED
2232.1	27.63	24.071	38.93	-11.3	50	22.37	PASSED

3.8. LTE28 test results

RX mode, channel 9235 / 760.5 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
761.14	47.61	240.16	66.31	-18.7	47	-0.61	PASSED*

*761.14 MHz frequency is coming from the communication tester and thus ignored.

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1520.7	37.43	74.388	55.23	-17.8	70	32.57	PASSED
1521.4	35.49	59.498	53.29	-17.8	70	34.51	PASSED
2280.3	40.95	111.558	51.65	-10.7	70	29.05	PASSED
2281.5	40.81	109.774	51.61	-10.8	70	29.19	PASSED
3000.3	38.01	79.524	45.81	-7.8	74	35.99	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1520.7	22.76	13.74	40.56	-17.8	50	27.24	PASSED
1521.4	22.76	13.74	40.56	-17.8	50	27.24	PASSED
2280.3	27.89	24.803	38.59	-10.7	50	22.11	PASSED
2281.5	27.84	24.66	38.64	-10.8	50	22.16	PASSED
3000.3	25.18	18.155	32.98	-7.8	54	28.82	PASSED

RX mode, channel 9435 / 780.5 MHz

Quasi peak (RBW: 100 kHz, VBW: 100 kHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
35.492	28.78	27.479	57.98	-29.2	40	11.22	PASSED
43.737	19.38	9.311	52.18	-32.8	40	20.62	PASSED
780.382	46.87	220.546	71.47	-24.6	47	0.13	PASSED

RX mode, channel 9435 / 780.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7823.146	46.75	217.52	43.85	2.9	74	27.25	PASSED
7842.088	46.92	221.82	44.02	2.9	74	27.08	PASSED
7851.102	46.67	215.526	43.67	3	74	27.33	PASSED
7855.012	45.66	191.867	42.66	3	74	28.34	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
7823.146	33.05	44.926	30.15	2.9	54	20.95	PASSED
7842.088	33.03	44.823	30.13	2.9	54	20.97	PASSED
7851.102	33.16	45.499	30.16	3	54	20.84	PASSED
7855.012	33.1	45.186	30.1	3	54	20.9	PASSED

RX mode, channel 9635 / 800.5 MHz

Peak (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1600.7	36.36	65.766	53.06	-16.7	70	33.64	PASSED
2400.5	40.74	108.893	50.74	-10	70	29.26	PASSED

Average (RBW: 1 MHz, VBW: 1 MHz)

Frequency [MHz]	E [dBμV/m]	E [μV/m]	U _{RX} [dBμV]	A _{TOT} [dB]	Limit [dBμV/m]	Margin	Results
1600.7	23.64	15.205	40.34	-16.7	50	26.36	PASSED
2400.5	28.24	25.823	38.24	-10	50	21.76	PASSED

4. Test Equipment

4.1. Conducted measurements

Eq. No	Equipment	Type	Manufacturer	Used in
TM38112	Power supply	6632A	Agilent	22/24/27, 15C, 15E
TM38114	Power supply	6632A	Agilent	22/24/27, 15C, 15E
TM210233	Communication Tester	CMU200	R&S	22/24/27
TM30600	Impulse limiter	ESH3-Z2	R&S	15C, 15B
TM26490	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
TM26491	LISN 50 µH	ESH3-Z5	R&S	15C, 15B
TM37610	Spectrum Analyzer	FSU26	R&S	22/24/27, 15C, 15E
TM23007	Oscilloscope	TDS684B	Tektronix	15E
TM22806	Battery	BAT 20/E	Fiskars	15C, 15B
TM22805	UPS	PS 20/1.2	Fiskars	15C, 15B
-	Temperature and humidity logger	175-H2	Testo	15C, 15B
-	Temperature and humidity logger	175-H2	Testo	22/24/27, 15C
-	Air pressure and temperature logger	635-2	Testo	22/24/27, 15C, 15B
-	Air pressure sensor	0638-1835	Testo	22/24/27, 15C, 15B
-	Temperature test chamber	VT 4002	Vötsch	22/24/27
2001	Bluetooth tester	CBT	R&S	15C, 15B
2009	LISN 50 µH	ENV216	R&S	15C, 15B
2010	LISN 50 µH	ENV216	R&S	15C, 15B
2012	Power splitter	11667B	Agilent	22/24/27, 15C
2013	Attenuator	8493C	Agilent	22/24/27, 15C
2014	Attenuator	8493C	Agilent	22/24/27, 15C
2019	Power splitter	ZN2PD-9G-S+	Mini-Circuits	15E
2020	Power splitter	ZN2PD-9G-S+	Mini-Circuits	15E
2021	Communication Tester	CMW500	R&S	22/24/27
2022	Communication Tester	CMU200	R&S	22/24/27
2023	Spectrum Analyzer	ESMI-RF	R&S	15B/15C
2024	Analyzer display unit	ESAI-D	R&S	15B/15C
2026	Signal Generator	SMF 100A	R&S	22/24/27, 15C, 15E, 15B
-	Bluetooth tester	CBT	R&S	15C, 15B
-	Communication Tester	CMU200	R&S	22/24/27, 15B

4.2. Radiated measurements

Eq. No	Equipment	Type	Manufacturer	Used in
-	Antenna	BBHA 9120 D	Schwarzbeck	22/24/27, 15C
TM38845	Receiver	ESIB 26	R&S	22/24/27, 15C, 15E, 15B
-	Antenna	HL562	R&S	22/24/27, 15C, 15E, 15B
-	Turntable	2188	EMCO	22/24/27, 15C, 15E, 15B
-	Turntable controller	2090	EMCO	22/24/27, 15C, 15E, 15B
-	RF system panel	OSP130	R&S	22/24/27, 15C, 15E, 15B
-	Mini mast	2075-2	ETS Lindgren	22/24/27, 15C, 15B
TM38843	Mini mast	2075	Emco	22/24/27, 15C, 15B
TM38842	Antenna mast controller	2090	Emco	22/24/27, 15C, 15B
TM30643	LISN 50 µH	LISN-5-20-2	FCC	22/24/27, 15C, 15B

Eq. No	Equipment	Type	Manufacturer	Used in
TM30644	LISN 50 μ H	LISN-5-20-2	FCC	22/24/27, 15C, 15B
-	Temperature and humidity logger	175-H2	Testo	22/24/27, 15C, 15B
-	Air pressure and temperature logger	635-2	Testo	22/24/27, 15C, 15B
-	Air pressure sensor	0638-1835	Testo	22/24/27, 15C, 15B
TM37523	Preamplifier	AMF-4D-10M-3G-25-20P	Miteq	22/24/27, 15C, 15B
TM37498	Preamplifier	AMF-5D-020180-26-10P	Miteq	22/24/27, 15C, 15B
TM30599	Semi anechoic chamber	UNKNOWN	TDK	22/24/27, 15C, 15B
TM22638	Power supply	OL63743-901	-	22/24/27, 15C, 15E, 15B
TM38066	High pass filter	WHKX3.0/18G-12SS	Wainwright	22/24/27, 15C, 15E, 15B
2028	High pass filter	WHKX 1.0/15G-12SS	Wainwright	22/24/27, 15C, 15E, 15B
TM37545	Tunable notch filter	800.0/960.0-0.2/40-8SSK	Wainwright	22
TM26512	Tunable notch filter	WRCD1850/1910-0.2/40-10SSK	Wainwright	24
-	Band reject filter	WRCG1877/1883-1870/1890-40/6EE	Wainwright	24
-	Band reject filter	WRCG1729.4/1735.4-1722.4/1742.4-40/6SS	Wainwright	27
TM23892	Controller	G-1000SDX	Yaesu	22/24/27, 15C, 15E
2001	Bluetooth tester	CBT	R&S	15C, 15B
2002	Communication Tester	CMU200	R&S	22/24/27, 15B
6023	Antenna	VUBA 9117	Schwarzbeck	22/24/27
2021	Communication Tester	CMW500	R&S	22/24/27
2025	Antenna	HFH2-Z2	R&S	15C
2026	Signal Generator	SMF 100A	R&S	22/24/27, 15C, 15E, 15B
2052	Antenna	BBHA 9120 D	Schwarzbeck	22/24/27, 15C, 15B, 15E
-	Antenna	QSH18S20	Q-Par	22/24/27, 15C, 15B, 15E
-	Antenna	QSH20S20	Q-Par	22/24/27, 15C, 15B, 15E
-	Antenna	QSH20S20	Q-Par	22/24/27, 15C, 15B, 15E
-	Bluetooth tester	CBT	R&S	15C, 15B